1 A dice is biased.

The table shows the probability of obtaining each of the scores on the dice.

Score	1	2	3	4	5	6
Probability	x	$2x$	$3x$	$4x$	$5x$	$6x$

Work out the probability of obtaining a score of 3.

Give your answer as a fraction in its simplest form.

..... **[3]**

2 A fair dice is numbered 1 to 6.

(a) The dice is thrown 100 times.

How many times might you expect the dice to land on 6?

(a) ..... **[3]**

(b) A fair spinner is numbered 1 to 4.
The dice is thrown and the spinner is spun.

Calculate the probability that the **total** of the two scores is 4.

(b) ..... **[3]**

3 There are only red counters, white counters and blue counters in a box.
The table shows the probability of choosing a red counter or a white counter at random from the box.

Colour	Red	White	Blue
Probability	0.15	0.7	

(a) Complete the table to show the probability of choosing a blue counter. **[2]**

(b) Work out the probability that a counter, chosen at random from the box, is either red or white.

(b) ..... **[2]**

(c) Write **two** different facts about the **number** of counters of each colour that are in the box.

1.....

.....

2.....

.....

[2]

4 Annabel has two fair spinners.
One spinner is numbered 1, 3, 5, 7 and the other is numbered 2, 4, 6, 8.
Both spinners are spun and the scores are added together.

(a) Complete the table to show all possible totals.

	2	4		
1	3			
3	5			
5				
7				

[2]

(b) Choose a word from this list to complete each sentence.

impossible	*unlikely*	*evens*	*likely*	*certain*

It is _____ that the total will be an odd number.

It is _____ that the total will be 7 or less.

[2]

(c) Work out the probability that the total will be 9.
Give your answer as a fraction in its simplest form.

(c) _____ **[2]**

(d) Work out the probability that the total will be a multiple of 5.

(d) _____ **[1]**

5 Jennifer has a biased six-sided dice with sides numbered 1 to 6.

(a) Complete the table to show the probability of the dice showing 4.

Score	1	2	3	4	5	6
Probability	0.2	0.15	0.11		0.17	0.24

[2]

(b) What is the probability that in one throw the dice will show an odd number?

(b) _____ **[2]**

(c) The dice is thrown twice.

What is the probability that the dice will show 2 on both occasions?

(c) _____ **[2]**

(d) The dice is thrown 250 times.

How many times might you expect the dice to show 3?

(d) _____ **[3]**

6 Tariq is investigating whether a coin is biased.
He tosses the coin 600 times.
The coin lands on heads 315 times.

Does this provide evidence that Tariq's coin is biased?
Justify your answer. **[3]**

7 Mrs Spencer goes to town by car, bus or taxi.

The probability she goes to town by car is 0.67.

The probability she goes to town by bus is 0.28.

Calculate the probability that Mrs Spencer goes to town by taxi.

..... **[2]**

8 Paula has two ordinary, fair, six-sided dice.
One is pink and the other is blue.
The two dice are thrown and the scores added.

(a) List the different ways in which Paula can throw a total of 5.

(a) ..... **[1]**

(b) What is the probability that Paula will throw a total of 5?

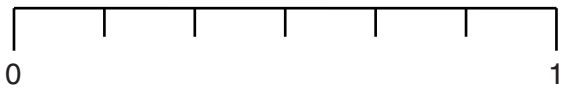
(b) ..... **[2]**

9 **(a** A fair 6-sided dice is thrown once.

On the probability line below

(i) mark with an arrow labelled A the probability that the dice will show a number greater than 2,

(ii) mark with an arrow labelled B the probability that the dice will show an odd number.



[2]

(b) Tessa has a **biased** 6-sided dice.
She wants to find the probability of getting a 4 when this dice is thrown.

Describe an experiment she could perform, and how the results could be used, to estimate the probability of throwing a 4.

_____

_____

_____

_____ **[3]**

10 A bag contains only 6 blue counters and 4 white counters.

George chooses one counter from the bag at random, and replaces it.
He then chooses another counter from the bag at random, and replaces it.

Alice then chooses one counter from the bag at random, and puts it to one side.
She then chooses another counter from the bag at random.

Who is more likely to have chosen two blue counters?
Show your working clearly. **[6]**

11 A box contains yellow, blue, red and green pencils.
Josie takes a pencil at random.

The probability that she takes a yellow pencil is 0.2.
The probability that she takes a blue pencil is 0.35.
The probability that she takes a red pencil is 0.15.

(a) (i) What is the probability that Josie will take a green pencil?

(a)(i) _____ **[2]**

(ii) What is the probability that Josie will take a yellow **or** a blue pencil?

(ii) _____ **[2]**

(b) Josie takes a pencil at random from the box, checks its colour and returns it to the box.
She then takes another pencil at random.

What is the probability that the first pencil is red **and** the second pencil is red?

(b) _____ **[2]**

(c) There are 8 yellow pencils in the box.

How many pencils are in the box altogether?

(c) _____ **[3]**